



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,343	12/22/1999	Bernardo Martinez-Tovar	P-1583	6032
23413	7590	10/19/2004	EXAMINER CHAMBERS, TROY	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			ART UNIT 3641	PAPER NUMBER

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/470,343		MARTINEZ-TOVAR ET AL.	
	Examiner		Art Unit	
	Troy Chambers		3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-18 and 25-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-18 and 25-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The amendment filed 09/30/04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: a bridge section "substantially free of tungsten". "Substantially" is a broad term that modifies "free" and therefore does not preclude the addition of other materials. The specification does not disclose how or in what manner the bridge section is "substantially free" of tungsten. While the specification argues against bridges that are covered by tungsten alone, there is nothing in the specification that discloses substantially tungsten-free titanium.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-9 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed,

had possession of the claimed invention. Specifically, the specification at the time of filing did not include a substantially tungsten-free titanium layer.

3. Claims 1-9, 11, 18 and 25-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 18 and 25 recite the limitations "pad section" and "bridge section". There is insufficient antecedent basis for this limitation in the claim. Applicant's first recitation of "a bridge section" and "a pad section" was part of a "configured to" clause. A bridge structure that is configured to have a bridge section and a pad section does not positively recite either section but merely requires the structure to be capable of such a configuration. The bridge and pad sections must first be positively recited in accordance with 35 U.S.C. 112(2).

4. Claims 1-9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 1 requires a bridge section to be "substantially free of tungsten". As discussed above, "substantially free" does not preclude the presence of tungsten and in fact may suggest the presence of tungsten. Because there are no examples in the specification of what "substantially free" means (e.g. percentages or proportions) it is unclear what the phrase means.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1- 8, 11, 12-17, 18, 25-32 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by PCT Publication WO 9742462 issued to Martinez-Tovar ("MT").

MT discloses a semiconductor bridge device 10, comprising: a silicon or sapphire substrate 12 (pg. 11, ll. 29-30); an electrical bridge structure disposed on the substrate 12 (fig. 1), the bridge structure comprising a layer of semiconductor material; a base layer of titanium (pg. 10, lines 29-30) substantially free of tungsten on the bridge section and *disposed on the semiconductor material*; the bridge structure comprising a bridge section 14c extending between pad sections 14a/b; a pair of aluminum lands 16a/b (pg. 9, ll. 13-36); a pair of electrical leads 32 a/b; and, a capacitor connected to said leads 32 a/b (pg. 24, ll. 24-29). MT discloses a substrate comprises silicon with a silicon dioxide layer (pg. 8, ll. 16-21). MT discloses a substrate comprising sapphire (pg. 8, ll. 24-27). MT discloses a semiconductor bridge wherein the material having a negative coefficient of electrical conductivity comprises polycrystalline silicon (claim 18). The titanium layer 18 is preconditioned to be stabilized against temperature-induced variations in resistance by being covered during the manufacturing process by other layers 20, 22 and, therefore, not exposed to oxygen (pg. 5, ll. 13-20).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3641

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over MT in view of US Patent No. 4976200 issued to Benson et al. ("Benson"). MT discloses a semiconductor bridge as described above. But, MT does not disclose a bridge structure comprising a layer of undoped polycrystalline silicon. However, the use of undoped silicon substrates is well known and used by those with ordinary skill in the semiconductor igniter art (see, e.g. U.S. Patent Nos. 4976200, 5309841, 5861570 and SIR H1366).

Specifically, Benson discloses a tungsten bridge for the low energy ignition of explosive and energetic materials wherein the substrate 12 and silicon bridge layer 20 are made of undoped silicon. At the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the doped silicon layers of MT with undoped silicon as taught by Benson. The suggestion/motivation for doing so would have been to save manufacturing time and costs (Benson, col. 3, ll. 67-67 to col. 4, ll. 1-28).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-8, 11-18, 20, 25-32 and 35 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 5-9, 12-20 and 36 of U.S. Patent No. 6133146 (the US equivalent to the MT disclosure). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons stated above.

Response to Arguments

5. Applicant's arguments (see pages 9-10, filed 09/30/04) with respect to the rejection of claims 12-17 have been fully considered and are persuasive. The rejection under 35 USC 112 (1) of claims 12-17 has been withdrawn.

6. Applicant's arguments filed 09/30/04 have been fully considered but they are not persuasive.

7. With respect to claim 1, applicant argues the claims are patentable because the "exclusion of tungsten" has been expressly recited. While that may or may not be true, MT nevertheless anticipates applicant's claimed invention. As discussed above, the MT reference discloses 3 layers. The base layer, which is disposed on the semiconductor material, is comprised of titanium. Applicant has used the transitional phrase "comprising" in the preamble. Hence, the inclusion of other layers (in addition to the titanium base layer) is not precluded.

8. With respect to claim 18, Applicant has amended claim 18 to include the “consisting essentially of” terminology. Applicant argues, “It is the Applicant’s prerogative to establish that ‘consisting essentially of’ language excludes only tungsten and other metals from the bridge section that similarly defeat the reduced energy requirements and/or improved reliability for firing realized by omitting tungsten, while leaving the claim open to metals on the bridge section in addition to titanium.” The Examiner agrees with the statement. However, when faced with such a claim, the Examiner must determine whether any additional elements recited by the prior art are excluded because they “defeat the novel characteristics of the *claimed invention*”. As the Examiner argued previously, the phrase “consisting essentially of” is used to limit the scope of the claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristics” of the **claimed invention**. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). The inclusion of tungsten does not defeat the novel characteristics the *claimed invention* which merely requires a series of electromechanical parts to be arranged in a particular pattern. Tungsten does not affect this arrangement because there is no requirement that the structure operate as disclosed in the specification. The transitional statement may be effective in a method claim in which the applicant “provides a SCB with a bridge section of tungsten; provide a pair of conductive lands; and, provide a charge to the lands to....etc.” In this example, the presence of tungsten would affect the *claimed invention* because novel characteristics of reduced energy and improved reliability would be affected. But, in an apparatus claim, the presence of tungsten does not affect the

~~claimed device because it is merely a collection of unoperable parts for which the applicant claims novelty.~~

9. With respect to claim 25, the metal (layer 18) of MT is disposed on the base layer and consists of titanium. MT discloses a plurality of different layers of different metals, so, any layer can be separately interpreted as being "the metal". The transitional phrase "comprising" in the preamble does not preclude additional layers of metal.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

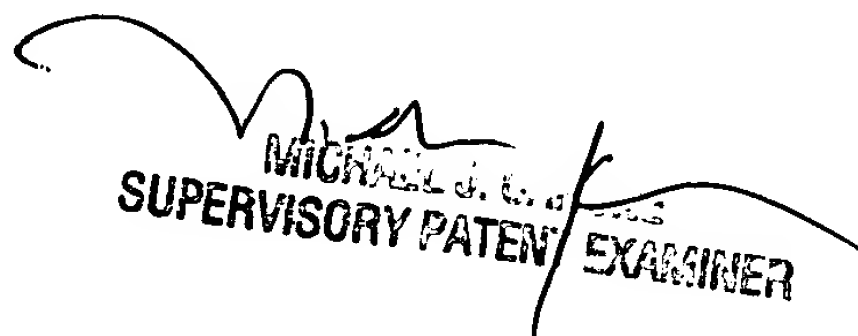
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Troy Chambers whose telephone number is (703) 308-

Art Unit: 3641

5870. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone, can be reached at (703) 306-4198.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-4177. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.


MICHAEL J. CARONE
SUPERVISORY PATENT EXAMINER